FCC 47 CFR § 2.1093
IEEE Std 1528-2013

SAR EVALUATION REPORT
(Part 0 : SAR CHARACTERIZATION)

FOR

GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB

MODEL NUMBER: SC-55D, SCG22

FCC ID: A3LSMF946JPN

REPORT NUMBER: 4790841160-S1V3

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IAS ACCREDITED

Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	7/5/2023	Initial Issue	--
V2	7/6/2023	Revised table in Sec. 6.3. Revised output power of LTE B41 in Sec.7. Revised UMPC 1-g body data of LTE B13	Seungyeon.Kim
V3	7/7/2023	Revised table in Sec. 6.3.	Seungyeon.Kim

Table of Contents

1. Attestation of SAR Characterization

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.
FCC ID	A3LSMF946JPN
Model Number	SC-55D, SCG22
Applicable Standards	FCC 47 CFR § 2.1093 IEC/IEEE Std 62209-1528 : 2020 Published RF exposure KDB procedures
Report type	Part.0 : SAR Characterization
Date Tested	5/25/2023 to 7/5/2023
Part 0 Purpose	Part 0 is the procedures for determining P_{Limit} for 2G/3G/4G/5G NR sub6 and WLAN/BT to satisfy *SAR_design_target* in order to FCC limit's requirement.

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government

Approved & Released By:	Prepared By:
	
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Seungyeon Kim Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

2. Introduction

The equipment under test (EUT) is SAMSUNG Smartphone (FCC ID : A3LSMF946JPN), it contains the Qualcomm modems supporting 2G/3G/4G/5G NR and WLAN/BT technologies. These modems are enable with Qualcomm Smart Transmit feature to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is in compliance with FCC requirement.

This purpose of the part 0 report is to determine SAR char is derived from SAR test measurements and conducted power measurements to determine P_{Limit} for each technology/band. The P_{Limit} represents the maximum time-averaged power level for the corresponding radio/antenna configuration.

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

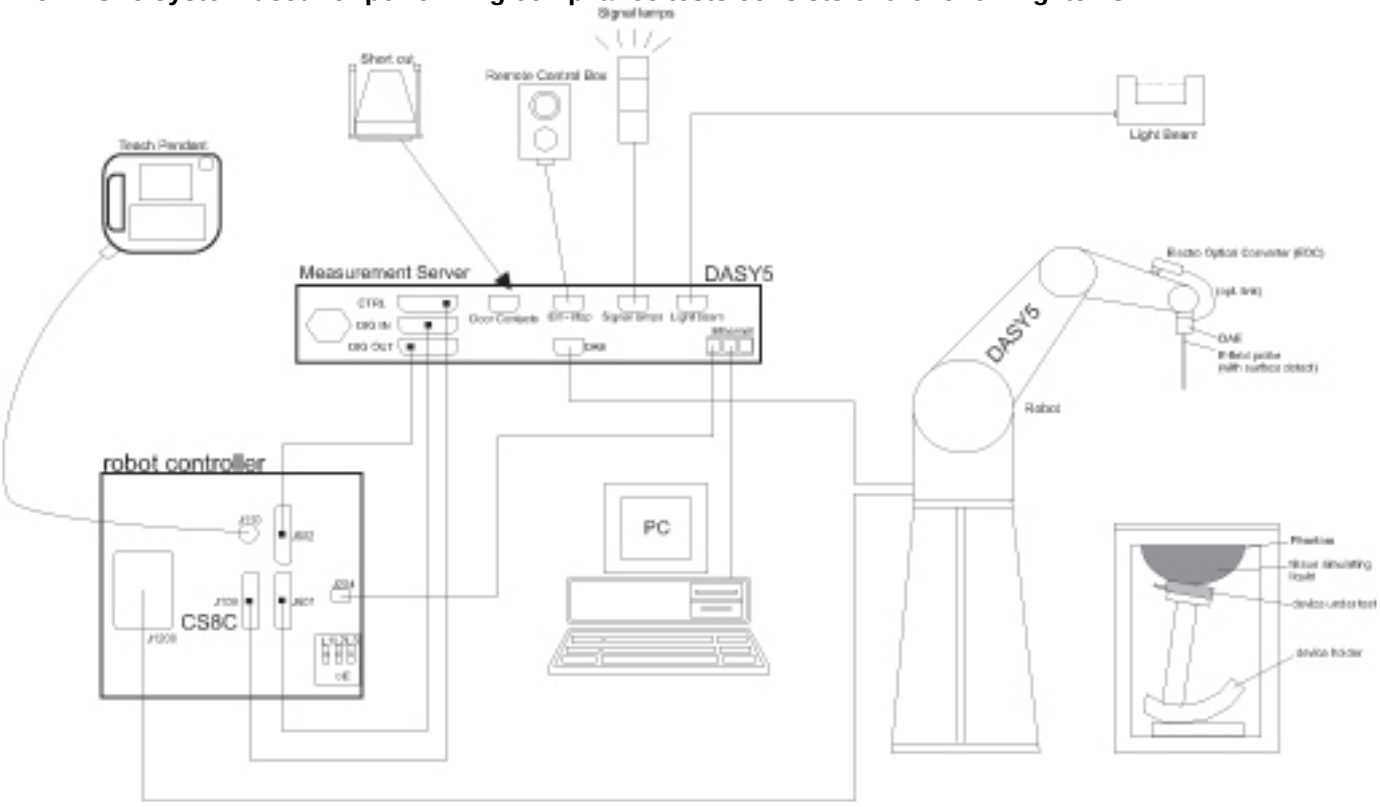
Suwon	
SAR 1 Room	SAR 6 Room
SAR 3 Room	SAR 7 Room
SAR 4 Room	SAR 8 Room
SAR 5 Room	SAR 9 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.
The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. SAR Measurement System & Test Equipment

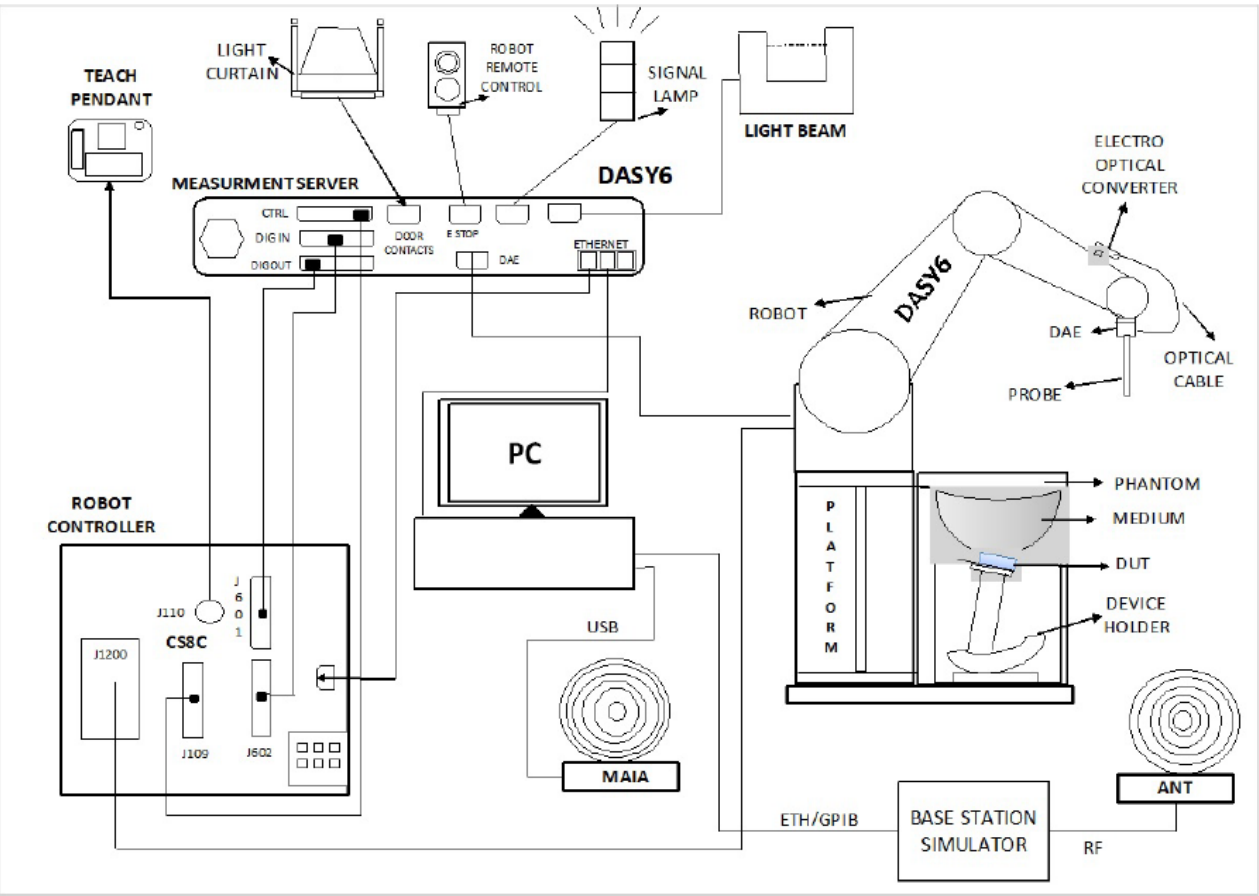
4.1. SAR Measurement System

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6 or 8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	E5071C	MY46522054	8/5/2023
Network Analyzer	ROHDE & SCHWARZ	ZNB 20	102256	8/5/2023
Dielectric Assessment Kit	SPEAG	DAK-12	1158	11/17/2023
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	7/25/2023
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Shorting block	SPEAG	DAK-12 Short	SM DAK 220 AD	N/A
Thermometer	LKM	DTM3000	3851	8/3/2023
Thermometer	LKM	DTM3000	3862	8/3/2023

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Aglient	N5181A	MY50145882	8/4/2023
MXG Analog Signal Generator	Keysight	N5181B	MY59100587	8/4/2023
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	8/4/2023
Power Sensor	KEYSIGHT	U2000A	MY60180020	8/3/2023
Power Sensor	KEYSIGHT	U2000A	MY60490008	8/3/2023
Power Sensor	KEYSIGHT	U2000A	MY60160004	8/3/2023
Power Sensor	KEYSIGHT	U2000A	MY61010010	8/3/2023
Power Amplifier	EXODUS	AMP2027	110025-AMP2027-1000	11/2/2023
Power Amplifier	MINI-CIRCUITS	TVA-R5-13A+	2111006	1/6/2024
Power Amplifier	EXODUS	AMP2027ADB	10002	1/6/2024
Directional Coupler	Aglient	772D	MY52180193	8/3/2023
Directional Coupler	H.P	778D	16133	8/3/2023
Directional Coupler	NARDA	4216-10	02835	8/3/2023
Directional Coupler	MINI-CIRCUITS	ZMDC-30-1+	SF569102123	8/3/2023
Low Pass Filter	FILTRON	L140012FL	1410003S	8/3/2023
Low Pass Filter	MICROLAB	LA-60N	3942	8/3/2023
Low Pass Filter	MINI-CIRCUITS	VLF-6000+	S0142	8/2/2023
Low Pass Filter	MINI-CIRCUITS	VLF-3000+	S0143	8/2/2023
Low Pass Filter	MINI-CIRCUITS	NLP-1200	VUU19301915	1/5/2024
Attenuator	KEYSIGHT	8491B/003	MY39272276	8/3/2023
Attenuator	KEYSIGHT	8491B/010	MY39271981	8/3/2023
Attenuator	KEYSIGHT	8491B/010	MY39272011	8/2/2023
Attenuator	KEYSIGHT	8491B/020	MY39272301	8/3/2023
Attenuator	KEYSIGHT	8491B/020	MY39272302	8/2/2023
Attenuator	KEYSIGHT	8491B/003	MY39272275	8/2/2023
E-Field Probe	SPEAG	EX3DV4	7313	3/24/2024
E-Field Probe	SPEAG	EX3DV4	7314	5/26/2024
E-Field Probe	SPEAG	EX3DV4	7330	1/24/2024
E-Field Probe	SPEAG	EX3DV4	7376	7/27/2023
E-Field Probe	SPEAG	EX3DV4	7545	8/19/2023
E-Field Probe	SPEAG	EX3DV4	7645	11/15/2023
E-Field Probe	SPEAG	EX3DV4	7651	5/30/2024
E-Field Probe	SPEAG	EX3DV4	7646	3/23/2024
E-Field Probe	SPEAG	EX3DV4	3871	9/26/2023

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. All equipments were used until Cal.Due data.

Test Equipment (Continued)

Data Acquisition Electronics	SPEAG	DAE4	1447	3-22-2024
Data Acquisition Electronics	SPEAG	DAE4	1494	7-18-2023
Data Acquisition Electronics	SPEAG	DAE4	1670	5-24-2024
Data Acquisition Electronics	SPEAG	DAE4	1671	5-25-2024
Data Acquisition Electronics	SPEAG	DAE4	1667	4-24-2024
Data Acquisition Electronics	SPEAG	DAE4	912	11-16-2023
Data Acquisition Electronics	SPEAG	DAE4	1668	4-26-2024
Data Acquisition Electronics	SPEAG	DAE4	1468	8-18-2023
System Validation Dipole	SPEAG	D750V3	1205	4-18-2024
System Validation Dipole	SPEAG	D835V2	4d174	9-21-2023
System Validation Dipole	SPEAG	D835V2	4d194	3-24-2024
System Validation Dipole	SPEAG	D1750V2	1125	11-30-2023
System Validation Dipole	SPEAG	D1900V2	5d190	11-16-2023
System Validation Dipole	SPEAG	D2450V2	939	7-21-2023
System Validation Dipole	SPEAG	D2450V2	960	3-24-2024
System Validation Dipole	SPEAG	D2600V2	1178	4-25-2024
System Validation Dipole	SPEAG	D5GHzV2	1209	2-28-2024
System Validation Dipole	SPEAG	D5GHzV2	1325	4-21-2024
System Validation Dipole	SPEAG	CLA -13	1015	8-23-2023
Thermometer	Lutron	MHB-382SD	AH.50215	1-9-2024
Thermometer	Lutron	MHB-382SD	AH.50213	1-11-2024
Thermometer	Lutron	MHB-382SD	AH.91463	1-11-2024
Thermometer	Lutron	MHB-382SD	AJ.45903	1-9-2024
Thermometer	Lutron	MHB-382SD	AJ.42446	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.12102	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.12103	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.12121	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.12123	1-9-2024
Thermometer	Lutron	MHB-382SD	AK.18789	8-9-2023

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8-2-2023
Base Station Simulator	R & S	CMW500	150314	8-2-2023
Base Station Simulator	R & S	CMW500	162790	8-2-2023
Base Station Simulator	R & S	CMW500	169803	1-5-2024
Base Station Simulator	R & S	CMW500	169801	1-5-2024
Base Station Simulator	R & S	CMW500	169799	8-2-2023
Base Station Simulator	R & S	CMW500	169800	8-2-2023
Base Station Simulator	R & S	CMW500	169798	8-2-2023
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY57510596	8-5-2023
UXM 5G Wireless Test Platform	KEYSIGHT	E751B	MY59150850	1-9-2024
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY58120110	1-10-2024
Radio Communication Test Station	Anritsu	MT8000A	6272466165	9-8-2023
Radio Communication Analyzer	Anritsu	MT8821C	6161094351	11-29-2023

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (for blue box items)
3. All equipments were used until Cal.Due data.

5. Device Under Test (DUT) Information

5.1. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☐ Yes ☒ No			
W-CDMA (UMTS)	Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6) DC-HSDPA (Category 24) HSPA+ (DL only)		100%
LTE	FDD Band 12 FDD Band 13 FDD Band 26 FDD Band 5 FDD Band 66 FDD Band 4 FDD Band 2 TDD Band 41 **<u>UL CA intra band-contiguous (2CC)</u>** 41C	QPSK 16QAM 64QAM Rel. 15 Carrier Aggregation (2 Uplink and 3 Downlinks)		100% (FDD) 63.3% (TDD)
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
NR (Sub6)	FDD Band n5 FDD Band n66 FDD Band n41	DFT-s-ODFM: ■ π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-ODFM: ■QPSK, 16QAM, 64QAM, 256QAM		100%
Wi-Fi	2.4 GHz	802.11b / 802.11g / 802.11n (HT20) 802.11ac (VHT20) / 802.11ax (HE20)		98.8% (802.11b-SISO) 98.9% (802.11b-MIMO)
	5 GHz	802.11a / 802.11n (HT20) & (HT40) 802.11ac (VHT20) & (VHT40) & (VHT80) & (VHT160) 802.11ax (HE20) & (HE40) & (HE80) & (HE160)		97.2% (802.11ac (VHT80-MIMO)
	6 GHz	802.11a 802.11ax (HE20) & (HE40) & (HE80) & (HE160)		99.7% (802.11ax (HE160-MIMO)
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 5.3 LE		76.5% (DH5)
NFC	13.56 MHz	Type A/B/F		100%
UWB	6489.6 – 7987.2 MHz	Signal Configurations(0/1/3), PRF modes(BPRF/HPRF)		100%

Notes:

1. Wi-Fi & Bluetooth were tested SAR using highest duty cycle. Measured duty cycle plots are in Section.9.
2. This device supports UL CA intra band in LTE Band. Detail of configuration refer to appendix.G.
3. Above 6GHz RF Exposure report has test results of WiFi 6GHz and UWB.

5.2. Time-Averaging for SAR

This device is enabled with Qualcomm Smart Transmit algorithm to control and manage transmitting power in real time and to ensure that the time-averaged RF exposure from 2G/3G/4G/5G NR Sub6 WWAN/WIFI/BT is compliance with FCC requirement. This part.0 report shows SAR characterization of 2G/3G/4G/5G NR Sub6 and WLAN/BT. Characterization is achieved by determining P_{limit} for 2G/3G/4G/5G NR Sub6 and WLAN/BT that correspond to the *SAR_design_target* after accounting for all device design related uncertainty. The SAR Characterization is denoted as SAR Char in this report.

5.3. Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G/ 5G NR Sub6/ and WLAN/BT	P_{limit}	Power level that corresponds to the exposure design target (*SAR_design_target*) after accounting for all device design related uncertainties
	P_{max}	Maximum tune up output power
	SAR_design_target	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	SAR Char	Table containing P_{limit} for all technologies and bands

6. SAR Characterizations

6.1. SAR Design Target

SAR_Design_target is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer.

SAR_design_target			
$SAR\_design\_target < SAR\_regulatory\_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$			
1g SAR (W/kg)		**10g SAR (W/kg)**	
Total Uncertainty	**1.0 dB**	**Total Uncertainty**	**1.0 dB**
SAR_regulatory_limit	**1.6 W/kg**	***SAR_regulatory_limit***	**4.0 W/kg**
SAR_design_target	**1.0 W/kg**	***SAR_design_target***	**2.5 W/kg**

6.2. DSI and SAR Determination

This device uses different Device State Index (DSI) to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the Tablet, the worst-case SAR was determined by measurements for the relevant exposure conditions for that DSI. Detailed descriptions of the detection mechanisms are included in the operational description.

The device state index (DSI) conditions used in below table represent different exposure scenarios.

DSI and Corresponding Exposure Scenarios

RF exposure Scenarios	DSI No.	Descroption	KDB guide For SAR test
Folder Opened - Head	2	1. Device positioned next to head 2. Receiver Active 3. Folder Open	KDB 648474 D04
Folder Closed - Head	3	1. Device positioned next to head 2. Receiver Active 3. Folder Closed	KDB 648474 D04
Folder Opened - Body	0	1. Device transmits in hotspot mode near body 2. Hotspot Mode Active 3. Folder Open	KDB 941225 D07
Folder Closed - Body-worn & Hotspot	1	1. Device transmits in hotspot mode near body 2. Hotspot Mode Active 3. Device being used with a body-worn accessory 4. Folder Closed	KDB 648474 D04 KDB 941225 D06
Folder Opened - Extremity	0	1. Device is held with hand 2. Folder Open	KDB 941225 D07
Folder Closed - Product Specific 10-g	1	1. Device is held with hand 2. Folder Closed	KDB 648474 D04 KDB 616217 D04

6.3. SAR Char

SAR results corresponding to P_{max} for each antenna/technology/band/DSI can be found in Section.7. P_{limit} is calculated by linearly scaling with the measured SAR at the P_{max} to correspond to *the SAR_ design_target*. P_{limit} determination for each exposure scenario corresponding to *SAR_design_target* are shown in table.

P_{Limit} Determination

Device State Index (DSI)	Plimit Determination Scenarios
DSI = 0 or 1	The worst-case SAR exposure is determined as maximum SAR normalized to the limit among; Folder Opened 1. UMPC 1g SAR folder open at 10 mm 2. UMPC 10g SAR folder open at 0 mm Folder Closed 1. Bodyworn & Hotspot SAR folder closed at 10 mm 2. Product Specific 10g SAR folder closed at 0 mm
DSI = 2 or 3	1. Plimit is calculated based on Head exposure SAR

Notes:

1. For DSI = 0 or 1, Plimit is calculated by:

All Antennas

P_{limit} = min{ P_{limit} corresponding to UMPC Body 1g SAR evaluation at 10 mm spacing,

P_{limit} corresponding to UMPC Extremity 10g SAR evaluation at 0 mm on all surfaces and side edges with each antenna location at within 25mm from that surface or edge.}

And

P_{limit} = min{ P_{limit} corresponding to Body-worn & Hotspot 1g SAR evaluation at 10mm spacing,

P_{limit} corresponding to Product specifc 10g SAR evaluation at 0 mm on all surfaces and side edges with each antenna location at within 25mm from that surface or edge.}

2. For Phablet devices: When hotspot mode applies, Product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
   In the case of DSI=1, phablet product specific 10-g SAR was not measured because the SAR value of Body-worn and hotspot was less than 1.2 W/kg.

SAR Characterizations

Exposure condition			Folder Open Body	Folder Open Extremity	Folder Closed Body & Hotspot	Folder Closed Product Specific 10-g	Folder Open Head	Folder Closed Head	Pmax (Maximum tune-up Power) (dBm)
Spatial-average			1g	10g	1g	10g	1g	1g	
Test distance (mm)			10	0	10	0	0	0	
Configuration			Folder Open	Folder Open	Folder Closed	Folder Closed	Folder Open	Folder Closed	
DSI:			0		1		2	3	
RF Air Interface	Antenna	Antenna Group	P_{limit} corresponding to 1.0 W/kg (SAR_design_target) (1g) / 2.5 W/kg (SAR_design_target) (10g)						
GSM 850	A, A+B	AG0	29.79		28.21		33.82	33.82	25.48
GSM 1900	B	AG0	18.49		18.49		34.73	34.73	22.24
WCDMA 5	A, A+B	AG0	26.75		27.86		33.21	33.21	24.50
LTE B2	B	AG0	19.00		19.00		32.85	32.85	24.00
LTE B5	A, A+B	AG0	26.64		28.52		33.35	33.35	24.50
LTE B12	A, A+B	AG0	26.96		27.63		31.93	31.93	24.50
LTE B13	A, A+B	AG0	29.92		29.86		33.75	33.75	24.50
LTE B26	A, A+B	AG0	26.69		28.40		33.25	33.25	24.50
LTE B66(4)	B	AG0	19.00		19.00		33.92	33.92	24.00
LTE B41 pc3	B	AG0	17.00		17.00		32.80	32.80	22.00
LTE B41 pc3 upper	F	AG1	19.00		19.00		18.00	28.95	22.00
NR Bn5	A, A+B	AG0	27.82		28.60		29.13	29.13	24.00
NR Bn66	B	AG0	19.00		19.00		32.39	32.39	24.00
NR Bn41	B	AG0	17.00		17.00		20.00	20.00	24.00
NR Bn41 Upper	F	AG1	19.00		19.00		19.00	20.00	24.00
DTS SISO Ant.2	G	AG1	20.29		23.38		17.00	17.00	18.00
DTS MIMO	H+G	AG1	20.49		21.79		17.00	17.00	18.00
UNII-2A MIMO	H+J	AG1	16.00		16.00		14.00	24.32	17.00
UNII-2C MIMO	H+J	AG1	16.00		16.00		14.00	24.47	17.00
UNII-3 MIMO	H+J	AG1	16.00		16.00		14.00	25.89	17.00
UNII-4 MIMO	H+J	AG1	16.00		16.00		14.00	25.03	17.00
WiFi 6e	H+J	AG1	21.12		15.22		24.43	24.43	9.00
Bluetooth Ant.1	H	AG1	25.12		27.82		28.92	28.92	17.00
Bluetooth Ant.2	G	AG1	20.53		21.38		20.14	20.14	15.00

Notes:

1. If P_{limit} is higher than P_{max} for some modes / bands, The modes/bands will operate at a power level up to P_{max}.
2. P_{max} (Maximum tune-up power) is specified in tune-up document. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty.
3. All P_{limit} EFS and maximum tune up output P_{max} levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (e.g GSM and LTE TDD).
4. P_{limit}(DSI=0) was determined to be the lower of “UMPC Body 1-g” and “UMPC Extremity 10-g” in each WWAN Bands.
5. P_{limit}(DSI=1) was determined to be the lower of “Body-worn & Hotspot” and “Product Specific 10-g” in each WWAN Bands.
6. Some band’s DSIs were determined more conservative P_{limit} instead of calculation P_{limit} in Section.7.

7. SAR Test results for P_{limit} calculations

Head exposure (DSI = 2, 3)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
Head	3	GSM 850	A	GPRS 2 Slots	190	0	Left Touch	24.75	0.027	40.44	33.82
						0	Left Tilt	24.75	0.026	40.60	
						0	Right Touch	24.75	0.035	39.31	
						0	Right Tilt	24.75	0.022	41.33	
Head	3		A+B	GPRS 2 Slots	190	0	Left Touch	24.75	0.098	34.84	
						0	Left Tilt	24.75	0.058	37.12	
						0	Right Touch	24.75	0.124	33.82	
						0	Right Tilt	24.75	0.065	36.62	
Head	3	GSM 1900	B	GPRS 3 Slots	661	0	Left Touch	22.51	0.028	38.04	34.73
						0	Left Tilt	22.51	0.022	39.09	
						0	Right Touch	22.51	0.060	34.73	
						0	Right Tilt	22.51	0.026	38.36	
Head	3	WCDMA 5	A	Rel 99 RMC 12.2 kbps	4183	0	Left Touch	24.21	0.099	34.25	33.21
						0	Left Tilt	24.21	0.070	35.76	
						0	Right Touch	24.21	0.126	33.21	
						0	Right Tilt	24.21	0.083	35.02	
Head	3		A+B	Rel 99 RMC 12.2 kbps	4183	0	Left Touch	24.21	0.094	34.48	
						0	Left Tilt	24.21	0.066	36.01	
						0	Right Touch	24.21	0.115	33.60	
						0	Right Tilt	24.21	0.070	35.76	
Head	3	LTE B2	B	QPSK BW=20 RB 1/0	18700	0	Left Touch	24.34	0.057	36.76	32.85
						0	Left Tilt	24.34	0.034	39.06	
						0	Right Touch	24.34	0.141	32.85	
						0	Right Tilt	24.34	0.032	39.30	
Head	3	LTE B5	A	QPSK BW=10 RB 1/0	20525	0	Left Touch	24.18	0.096	34.36	33.35
						0	Left Tilt	24.18	0.072	35.61	
						0	Right Touch	24.18	0.112	33.69	
						0	Right Tilt	24.18	0.068	35.85	
Head	3		A+B	QPSK BW=10 RB 1/0	20525	0	Left Touch	24.18	0.102	34.09	
						0	Left Tilt	24.18	0.075	35.43	
						0	Right Touch	24.18	0.121	33.35	
						0	Right Tilt	24.18	0.061	36.33	
Head	3	LTE B12	A	QPSK BW=10 RB 1/49	23095	0	Left Touch	23.81	0.087	34.41	31.93
						0	Left Tilt	23.81	0.052	36.65	
						0	Right Touch	23.81	0.135	32.51	
						0	Right Tilt	23.81	0.075	35.06	
Head	3		A+B	QPSK BW=10 RB 1/49	23095	0	Left Touch	23.81	0.119	33.05	
						0	Left Tilt	23.81	0.075	35.06	
						0	Right Touch	23.81	0.154	31.93	
						0	Right Tilt	23.81	0.096	33.99	
Head	3	LTE B13	A	QPSK BW=10 RB 1/0	23230	0	Left Touch	24.47	0.079	35.49	33.75
						0	Left Tilt	24.47	0.044	38.04	
						0	Right Touch	24.47	0.096	34.65	
						0	Right Tilt	24.47	0.053	37.23	
Head	3		A+B	QPSK BW=10 RB 1/0	23230	0	Left Touch	24.47	0.094	34.74	
						0	Left Tilt	24.47	0.058	36.84	
						0	Right Touch	24.47	0.118	33.75	
						0	Right Tilt	24.47	0.067	36.21	
Head	3	LTE B26	A	QPSK BW=15 RB 1/37	26865	0	Left Touch	24.01	0.095	34.23	33.25
						0	Left Tilt	24.01	0.069	35.62	
						0	Right Touch	24.01	0.104	33.84	
						0	Right Tilt	24.01	0.064	35.95	
Head	3		A+B	QPSK BW=15 RB 1/37	26865	0	Left Touch	24.01	0.099	34.05	
						0	Left Tilt	24.01	0.073	35.38	
						0	Right Touch	24.01	0.119	33.25	
						0	Right Tilt	24.01	0.060	36.23	
Head	3	LTE B66(4)	B	QPSK BW=20 RB 1/0	132322	0	Left Touch	24.13	0.052	36.99	33.92
						0	Left Tilt	24.13	0.015	42.34	
						0	Right Touch	24.13	0.105	33.92	
						0	Right Tilt	24.13	0.048	37.34	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

Head exposure (DSI = 2, 3) (Continued)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P_{limit} (dBm)	Minimum P_{limit} (dBm)
Head	3	LTE B41 pc3	B	QPSK BW=20 RB 1/0	41055	0	Left Touch	21.78	0.043	35.45	32.80
						0	Left Tilt	21.78	0.019	38.99	
						0	Right Touch	21.78	0.079	32.80	
						0	Right Tilt	21.78	0.019	38.99	
Head	3	LTE B41 pc3 upper	F	QPSK BW=20 RB 1/0	41490	0	Left Touch	22.05	0.135	30.75	28.95
						0	Left Tilt	22.05	0.169	29.77	
						0	Right Touch	22.05	0.204	28.95	
						0	Right Tilt	22.05	0.172	29.69	
Head	3	NR Bn5	A	DFT-s OFDM QPSK BW=20 RB 50/28	167300	0	Left Touch	23.67	0.087	34.27	29.13
						0	Left Tilt	23.67	0.079	34.69	
						0	Right Touch	23.67	0.067	35.41	
						0	Right Tilt	23.67	0.062	35.75	
Head	3		A+B	DFT-s OFDM QPSK BW=20 RB 1/53	167300	0	Left Touch	23.90	0.197	30.96	
						0	Left Tilt	23.90	0.264	29.68	
						0	Right Touch	23.90	0.264	29.68	
						0	Right Tilt	23.90	0.300	29.13	
Head	3	NR Bn66	B	DFT-s OFDM QPSK BW=40 RB 108/54	349000	0	Left Touch	23.94	0.076	35.13	32.39
						0	Left Tilt	23.94	0.029	39.32	
						0	Right Touch	23.94	0.143	32.39	
						0	Right Tilt	23.94	0.049	37.04	
Head	3	NR Bn41	B	DFT-s OFDM QPSK BW=100 RB 1/271	518598	0	Left Touch	20.85	0.068	32.52	32.52
						0	Left Tilt	20.85	0.036	35.29	
						0	Right Touch	20.85	0.065	32.72	
						0	Right Tilt	20.85	0.021	37.63	
Head	3	NR Bn41 upper	F	DFT-s OFDM QPSK BW=100 RB 1/1	518598	0	Left Touch	20.98	0.309	26.08	25.05
						0	Left Tilt	20.98	0.333	25.76	
						0	Right Touch	20.98	0.392	25.05	
						0	Right Tilt	20.98	0.338	25.69	
Head	3	DTS SISO Ant.2	G	802.11b 1Mbps	6	0	Left Touch	17.63	0.339	22.33	20.57
						0	Left Tilt	17.63	0.508	20.57	
						0	Right Touch	17.63	0.354	22.14	
						0	Right Tilt	17.63	0.457	21.03	
Head	3	DTS MIMO	H+G	802.11b 1Mbps	11	0	Left Touch	17.35	0.650	19.22	18.04
						0	Left Tilt	17.35	0.790	18.37	
						0	Right Touch	17.35	0.744	18.63	
						0	Right Tilt	17.35	0.854	18.04	
Head	3	UNII-2A MIMO	H+J	802.11ac VHT80	58	0	Left Touch	17.08	0.148	25.38	24.32
						0	Left Tilt	16.77	0.077	27.91	
						0	Right Touch	17.08	0.189	24.32	
						0	Right Tilt	16.77	0.056	29.29	
Head	3	UNII-2C MIMO	H+J	802.11ac VHT80	138	0	Left Touch	17.27	0.134	26.00	24.47
						0	Left Tilt	17.07	0.060	29.29	
						0	Right Touch	17.07	0.182	24.47	
						0	Right Tilt	17.27	0.059	29.56	
Head	3	UNII-3 MIMO	H+J	802.11ac VHT80	155	0	Left Touch	16.53	0.036	30.97	25.89
						0	Left Tilt	17.69	0.057	30.13	
						0	Right Touch	16.53	0.116	25.89	
						0	Right Tilt	17.69	0.055	30.29	
Head	3	UNII-4 MIMO	H+J	802.11ac VHT80	171	0	Left Touch	16.85	0.103	26.72	25.03
						0	Left Tilt	17.19	0.055	29.79	
						0	Right Touch	16.85	0.152	25.03	
						0	Right Tilt	17.19	0.053	29.95	
Head	3	WIFI 6e	H+J	802.11ax HE160	79	0	Left Touch	9.62	0.018	27.07	24.43
						0	Left Tilt	9.62	0.002	36.61	
						0	Right Touch	9.62	0.033	24.43	
						0	Right Tilt	8.29	0.001	38.29	
Head	3	Bluetooth Ant.1	H	GFSK DH5	39	0	Left Touch	17.86	0.078	28.92	28.92
						0	Left Tilt	17.86	0.043	31.50	
						0	Right Touch	17.86	0.052	30.70	
						0	Right Tilt	17.86	0.046	31.22	
Head	3	Bluetooth Ant.2	G	GFSK DH5	0	0	Left Touch	15.07	0.227	21.51	20.14
						0	Left Tilt	15.07	0.311	20.14	
						0	Right Touch	15.07	0.142	23.55	
						0	Right Tilt	15.07	0.306	20.21	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

Body-worn & Hotspot exposure (DSI = 1)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
Body & Hotspot	1	GSM 850	A	GPRS 2 Slots	190	10	Rear	24.75	0.121	33.92	28.21
						10	Front	24.75	0.043	38.41	
						10	Left	24.75	0.087	35.35	
						10	Bottom	24.75	0.041	38.62	
Body & Hotspot	1		A+B	GPRS 2 Slots	190	10	Rear	24.75	0.451	28.21	
						10	Front	24.75	0.152	32.93	
						10	Left	24.75	0.336	29.49	
						10	Bottom	24.75	0.135	33.45	
						10	Right	24.75	0.138	33.35	
Body & Hotspot	1	GSM 1900	B	GPRS 4 Slots	512	10	Rear	18.05	0.293	23.38	21.61
						10	Front	18.05	0.090	28.51	
						10	Left	18.05	0.122	27.19	
						10	Bottom	18.05	0.441	21.61	
						10	Right	18.05	0.030	33.28	
Body & Hotspot	1	WCDMA 5	A	Rel 99 RMC 12.2 kbps	4183	10	Rear	24.21	0.376	28.46	27.86
						10	Front	24.21	0.143	32.66	
						10	Left	24.21	0.212	30.95	
						10	Bottom	24.21	0.128	33.14	
Body & Hotspot	1		A+B	Rel 99 RMC 12.2 kbps	4183	10	Rear	24.21	0.432	27.86	
						10	Front	24.21	0.128	33.14	
						10	Left	24.21	0.243	30.35	
						10	Bottom	24.21	0.128	33.14	
						10	Right	24.21	0.098	34.30	
Body & Hotspot	1	LTE B2	B	QPSK BW=20 RB 50/24	18700	10	Rear	19.35	0.404	23.29	21.71
						10	Front	19.35	0.195	26.45	
						10	Left	19.35	0.168	27.10	
						10	Bottom	19.35	0.581	21.71	
						10	Right	19.35	0.044	32.92	
Body & Hotspot	1	LTE B5	A	QPSK BW=10 RB 1/0	20525	10	Rear	24.18	0.360	28.62	28.52
						10	Front	24.18	0.126	33.18	
						10	Left	24.18	0.239	30.40	
						10	Bottom	24.18	0.127	33.14	
Body & Hotspot	1		A+B	QPSK BW=10 RB 1/0	20525	10	Rear	24.18	0.368	28.52	
						10	Front	24.18	0.135	32.88	
						10	Left	24.18	0.266	29.93	
						10	Bottom	24.18	0.122	33.32	
						10	Right	24.18	0.112	33.69	
Body & Hotspot	1	LTE B12	A	QPSK BW=10 RB 1/49	23095	10	Rear	23.81	0.185	31.14	27.63
						10	Front	23.81	0.130	32.67	
						10	Left	23.81	0.336	28.55	
						10	Bottom	23.81	0.075	35.06	
Body & Hotspot	1		A+B	QPSK BW=10 RB 1/49	23095	10	Rear	23.81	0.257	29.71	
						10	Front	23.81	0.153	31.96	
						10	Left	23.81	0.415	27.63	
						10	Bottom	23.81	0.098	33.90	
						10	Right	23.81	0.235	30.10	
Body & Hotspot	1	LTE B13	A	QPSK BW=10 RB 1/0	23230	10	Rear	24.47	0.186	31.77	29.86
						10	Front	24.47	0.101	34.43	
						10	Left	24.47	0.256	30.39	
						10	Bottom	24.47	0.091	34.88	
Body & Hotspot	1		A+B	QPSK BW=10 RB 1/0	23230	10	Rear	24.47	0.226	30.93	
						10	Front	24.47	0.125	33.50	
						10	Left	24.47	0.289	29.86	
						10	Bottom	24.47	0.071	35.96	
						10	Right	24.47	0.110	34.06	
Body & Hotspot	1	LTE B26	A	QPSK BW=15 RB 1/37	26865	10	Rear	24.01	0.364	28.40	28.40
						10	Front	24.01	0.133	32.77	
						10	Left	24.01	0.212	30.75	
						10	Bottom	24.01	0.131	32.84	
Body & Hotspot	1		A+B	QPSK BW=15 RB 1/37	26865	10	Rear	24.01	0.355	28.51	
						10	Front	24.01	0.133	32.77	
						10	Left	24.01	0.261	29.84	
						10	Bottom	24.01	0.119	33.25	
						10	Right	24.01	0.109	33.64	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

Body-worn & Hotspot exposure (DSI = 1) (Continued)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
Body & Hotspot	1	LTE B66(4)	B	QPSK BW=20 RB 1/0	132322	10	Rear	19.03	0.386	23.16	22.32
						10	Front	19.03	0.107	28.74	
						10	Left	19.03	0.121	28.20	
						10	Bottom	19.03	0.469	22.32	
						10	Right	19.03	0.048	32.22	
Body & Hotspot	1	LTE B41 pc3	B	QPSK BW=20 RB 50/0	41055	10	Rear	17.08	0.366	21.45	19.82
						10	Front	17.08	0.060	29.30	
						10	Left	17.08	0.086	27.74	
						10	Bottom	17.08	0.532	19.82	
						10	Right	17.08	0.026	32.93	
Body & Hotspot	1	LTE B41 pc3 upper	F	QPSK BW=20 RB 1/0	41490	10	Rear	19.28	0.158	27.29	26.68
						10	Front	19.28	0.034	33.97	
						10	Top	19.28	0.182	26.68	
						10	Right	19.28	0.053	32.04	
Body & Hotspot	1	NR Bn5	A	DFT-s OFDM QPSK BW=20 RB 50/28	167300	10	Rear	24.07	0.326	28.94	28.60
						10	Front	24.07	0.078	35.15	
						10	Left	24.07	0.164	31.92	
						10	Bottom	24.07	0.069	35.68	
Body & Hotspot	1		A+B	DFT-s OFDM QPSK BW=20 RB 50/28	167300	10	Rear	24.07	0.352	28.60	
						10	Front	24.07	0.108	33.74	
						10	Left	24.07	0.109	33.70	
						10	Bottom	24.07	0.111	33.62	
						10	Right	24.07	0.251	30.07	
Body & Hotspot	1	NR Bn66	B	DFT-s OFDM QPSK BW=40 RB 108/54	349000	10	Rear	18.87	0.520	21.71	20.78
						10	Front	18.87	0.203	25.80	
						10	Left	18.87	0.140	27.41	
						10	Bottom	18.87	0.644	20.78	
						10	Right	18.87	0.067	30.61	
Body & Hotspot	1	NR Bn41	B	DFT-s OFDM QPSK BW=100 RB 135/138	518598	10	Rear	17.61	0.320	22.56	20.43
						10	Front	17.61	0.062	29.69	
						10	Left	17.61	0.085	28.32	
						10	Bottom	17.61	0.522	20.43	
						10	Right	17.61	0.028	33.14	
Body & Hotspot	1	NR Bn41 upper	F	DFT-s OFDM QPSK BW=100 RB 1/1	518598	10	Right	19.63	0.228	26.05	24.19
						10	Front	19.63	0.069	31.24	
						10	Left	19.63	0.350	24.19	
						10	Bottom	19.63	0.052	32.47	
Body & Hotspot	1	DTS SISO Ant.2	G	802.11b 1Mbps	6	10	Rear	18.64	0.219	25.24	23.38
						10	Front	18.64	0.089	29.16	
						10	Top	18.64	0.336	23.38	
						10	Left	18.64	0.068	30.30	
Body & Hotspot	1	DTS MIMO	H+G	802.11b 1Mbps	6	10	Rear	18.35	0.150	26.59	21.79
						10	Front	18.35	0.131	27.18	
						10	Top	18.35	0.453	21.79	
						10	Left	18.35	0.257	24.25	
						10	Right	18.35	0.010	38.31	
Body & Hotspot	1	UNII-2A MIMO	H+J	802.11ac VHT80	58	10	Rear	15.44	0.563	17.93	17.93
						10	Front	16.72	0.019	33.93	
Body & Hotspot	1	UNII-2C MIMO	H+J	802.11ac VHT80	138	10	Rear	16.11	0.654	17.95	17.95
						10	Front	16.71	0.013	35.57	
Body & Hotspot	1	UNII-3 MIMO	H+J	802.11ac VHT80	155	10	Rear	15.68	0.792	16.69	16.69
						10	Front	15.68	0.011	35.27	
Body & Hotspot	1	UNII-4 MIMO	H+J	802.11ac VHT80	171	10	Rear	15.86	0.646	17.76	17.76
						10	Front	16.37	0.017	34.07	
Body & Hotspot	1	WIFI 6e	H+J	802.11ax HE160	207	10	Rear	8.74	0.225	15.22	15.22
					79	10	Front	9.62	0.013	28.48	
Body & Hotspot	1	Bluetooth Ant.1	H	GFSK DH5	39	10	Rear	17.86	0.082	28.70	27.82
						10	Front	17.86	0.017	35.45	
						10	Left	17.86	0.101	27.82	
Body & Hotspot	1	Bluetooth Ant.2	G	GFSK DH5	0	10	Rear	15.07	0.134	23.80	21.38
						10	Front	15.07	0.049	28.21	
						10	Top	15.07	0.234	21.38	
						10	Left	15.07	0.041	28.99	
						10	Right	15.07	0.012	34.20	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

Product Specific 10-g without triggering sensor (DSI = 1)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P_{limit} (dBm)	Minimum P_{limit} (dBm)
Product Specific-10g	1	UNII-2A MIMO	H+J	802.11ac VHT80 MCS0	58	0	Rear	15.44	0.910	19.83	19.83
						0	Front	16.72	0.067	32.44	
						0	Top	15.44	0.151	27.63	
						0	Left	16.72	0.308	25.81	
						0	Right	16.72	0.040	34.68	
Product Specific-10g	1	UNII-2C MIMO	H+J	802.11ac VHT80 MCS0	138	0	Rear	16.11	0.938	20.37	20.37
						0	Front	16.71	0.122	29.83	
						0	Top	16.11	0.161	28.02	
						0	Left	16.71	0.329	25.52	
						0	Right	16.71	0.030	35.92	
Product Specific-10g	1	UNII-3 MIMO	H+J	802.11ac VHT80 MCS0	155	0	Rear	15.68	0.640	21.60	21.60
						0	Front	16.33	0.044	33.87	
						0	Top	15.68	0.092	30.02	
						0	Left	16.33	0.255	26.24	
						0	Right	15.68	0.008	40.63	
Product Specific-10g	1	UNII-4 MIMO	H+J	802.11ac VHT80 MCS0	171	0	Rear	15.86	0.868	20.45	20.45
						0	Front	16.37	0.056	32.87	
						0	Top	15.86	0.148	28.14	
						0	Left	16.37	0.413	24.19	
						0	Right	16.37	0.028	35.88	
Product Specific-10g	1	WIFI 6e	H+J	802.11ax HE160 72.0 Mbps	79	0	Rear	8.29	0.044	25.83	22.63
						0	Front	9.62	0.034	28.28	
						0	Top	8.29	0.016	30.23	
						0	Left	9.62	0.125	22.63	
						0	Right	8.29	0.001	42.27	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

UMPC Body-1g Exposure (DSI = 0)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P_{limit} (dBm)	Minimum P_{limit} (dBm)
UMPC Body-1g	0	GSM 850	A+B	GPRS 2 Slots	190	10	Rear	24.75	0.313	29.79	29.79
						10	Front	24.75	0.193	31.89	
						10	Left	24.75	0.184	32.10	
						10	Bottom	24.75	0.171	32.42	
UMPC Body-1g	0	GSM 1900	B	GPRS 4 Slots	512	10	Rear	18.54	0.253	24.51	21.67
						10	Front	18.54	0.193	25.68	
						10	Left	18.54	0.140	27.08	
						10	Bottom	18.54	0.486	21.67	
UMPC Body-1g	0	WCDMA 5	A+B	Rel 99 RMC 12.2 kbps	4183	10	Rear	24.21	0.557	26.75	26.75
						10	Front	24.21	0.414	28.04	
						10	Left	24.21	0.252	30.20	
						10	Bottom	24.21	0.273	29.85	
UMPC Body-1g	0	LTE B2	B	QPSK BW=20 RB 1/0	18700	10	Rear	19.21	0.304	24.38	22.13
						10	Front	19.21	0.199	26.22	
						10	Left	19.21	0.125	28.24	
						10	Bottom	19.21	0.511	22.13	
UMPC Body-1g	0	LTE B5	A+B	QPSK BW=10 RB 1/0	20525	10	Rear	24.18	0.567	26.64	26.64
						10	Front	24.18	0.356	28.67	
						10	Left	24.18	0.251	30.18	
						10	Bottom	24.18	0.259	30.05	
UMPC Body-1g	0	LTE B12	A+B	QPSK BW=10 RB 1/49	23095	10	Rear	23.81	0.310	28.90	28.90
						10	Front	23.81	0.227	30.25	
						10	Left	23.81	0.115	33.20	
						10	Bottom	23.81	0.205	30.69	
UMPC Body-1g	0	LTE B13	A+B	QPSK BW=10 RB 1/0	23230	10	Rear	24.47	0.285	29.92	29.92
						10	Front	24.47	0.204	31.37	
						10	Left	24.47	0.244	30.60	
						10	Bottom	24.47	0.174	32.06	
UMPC Body-1g	0	LTE B26	A+B	QPSK BW=15 RB 1/37	26865	10	Rear	24.01	0.503	26.99	26.99
						10	Front	24.01	0.374	28.28	
						10	Left	24.01	0.237	30.26	
						10	Bottom	24.01	0.257	29.91	
UMPC Body-1g	0	LTE B66(4)	B	QPSK BW=20 RB 50/24	132322	10	Rear	19.14	0.456	22.55	22.54
						10	Front	19.14	0.288	24.55	
						10	Left	19.14	0.122	28.28	
						10	Bottom	19.14	0.457	22.54	
UMPC Body-1g	0	LTE B41 pc3	B	QPSK BW=20 RB 50/0	41055	10	Rear	17.08	0.464	20.41	18.45
						10	Front	17.08	0.246	23.17	
						10	Left	17.08	0.178	24.58	
						10	Bottom	17.08	0.729	18.45	
UMPC Body-1g	0	LTE B41 pc3 upper	F	QPSK BW=20 RB 50/0	41490	10	Rear	19.32	0.166	27.12	26.46
						10	Front	19.32	0.108	28.99	
						10	Top	19.32	0.193	26.46	
UMPC Body-1g	0	NR Bn5	A+B	DFT-s-QPSK BW=20 RB 50/28	167300	10	Rear	24.07	0.422	27.82	27.82
						10	Front	24.07	0.260	29.92	
						10	Left	24.07	0.175	31.64	
						10	Bottom	24.07	0.218	30.69	
UMPC Body-1g	0	NR Bn66	B	DFT-s-QPSK BW=20 RB 108/54	349000	10	Rear	18.87	0.272	24.52	23.19
						10	Front	18.87	0.159	26.86	
						10	Left	18.87	0.128	27.80	
						10	Bottom	18.87	0.370	23.19	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

UMPC Body-1g Exposure (DSI = 0) (Continued)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
UMPC Body-1g	0	NR Bn41	B	DFT-s-QPSK BW=100 RB 135/138	518598	10	Rear	17.61	0.346	22.22	19.57
						10	Front	17.61	0.189	24.85	
						10	Left	17.61	0.069	29.22	
						10	Bottom	17.61	0.637	19.57	
UMPC Body-1g	0	NR Bn41 upper	F	DFT-s-QPSK BW=100 RB 1/1	518598	10	Rear	19.63	0.275	25.24	22.81
						10	Front	19.63	0.240	25.83	
						10	Top	19.63	0.481	22.81	
UMPC Body-1g	0	DTS SISO Ant.2	G	802.11b 1Mbps	6	10	Rear	18.64	0.211	25.40	24.14
						10	Front	18.64	0.089	29.16	
						10	Top	18.64	0.282	24.14	
						10	Left	18.64	0.095	28.88	
UMPC Body-1g	0	DTS MIMO	H+G	802.11b 1Mbps	11	10	Rear	17.82	0.259	23.69	22.99
						10	Front	18.58	0.228	25.00	
						10	Top	18.58	0.362	22.99	
						10	Left	18.58	0.361	23.00	
UMPC Body-1g	0	UNII-2A MIMO	H+J	802.11ac VHT 80	58	10	Rear	15.44	0.642	17.36	17.36
						10	Front	16.72	0.104	26.55	
						10	Top	15.44	0.074	26.75	
						10	Left	16.72	0.142	25.20	
UMPC Body-1g	0	UNII-2C MIMO	H+J	802.11ac VHT 80	138	10	Rear	16.11	0.736	17.44	17.44
						10	Front	16.71	0.201	23.68	
						10	Top	16.11	0.155	24.21	
						10	Left	16.71	0.277	22.29	
UMPC Body-1g	0	UNII-3 MIMO	H+J	802.11ac VHT 80	155	10	Rear	15.68	0.656	17.51	17.51
						10	Front	16.33	0.200	23.32	
						10	Top	15.68	0.155	23.78	
						10	Left	16.33	0.271	22.00	
UMPC Body-1g	0	UNII-4 MIMO	H+J	802.11ac VHT 80	171	10	Rear	15.86	0.584	18.20	18.20
						10	Front	16.37	0.222	22.91	
						10	Top	15.86	0.119	25.10	
						10	Left	16.37	0.260	22.22	
UMPC Body-1g	0	WIFI 6e	H+J	802.11ax HE160 72.0 Mbps	79	10	Rear	8.29	0.047	21.57	21.57
						10	Front	8.29	0.024	24.49	
						10	Top	8.29	0.008	29.26	
						10	Left	9.62	0.003	34.85	
UMPC Body-1g	0	Bluetooth Ant.1	H	GFSK DH5	39	10	Rear	17.86	0.089	28.35	26.37
						10	Front	17.86	0.100	27.86	
						10	Left	17.86	0.141	26.37	
UMPC Body-1g	0	Bluetooth Ant.2	G	GFSK DH5	0	10	Rear	15.07	0.086	25.72	23.19
						10	Front	15.07	0.061	27.19	
						10	Top	15.07	0.154	23.19	
						10	Left	15.07	0.036	29.48	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative Plimit instead of calculation Plimit.

UMPC Extremity-10g Exposure (DSI = 0)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
UMPC Extremity-10g	0	GSM 850	A+B	GPRS 2 Slots	190	0	Rear	24.75	0.527	31.51	29.80
						0	Front	24.75	0.505	31.70	
						0	Left	24.75	0.782	29.80	
						0	Bottom	24.75	0.459	32.11	
UMPC Extremity-10g	0	GSM 1900	B	GPRS 4 Slots	512	0	Rear	18.54	0.885	23.05	20.97
						0	Front	18.54	0.594	24.78	
						0	Left	18.54	0.296	27.81	
						0	Bottom	18.54	1.430	20.97	
UMPC Extremity-10g	0	WCDMA 5	A+B	Rel 99 RMC 12.2 kbps	4183	0	Rear	24.21	1.150	27.58	26.82
						0	Front	24.21	0.956	28.38	
						0	Left	24.21	1.370	26.82	
						0	Bottom	24.21	0.833	28.98	
UMPC Extremity-10g	0	LTE B2	B	QPSK BW=20 RB 50/24	18700	0	Rear	19.35	0.990	23.37	20.85
						0	Front	19.35	0.829	24.14	
						0	Left	19.35	0.276	28.92	
						0	Bottom	19.35	1.770	20.85	
UMPC Extremity-10g	0	LTE B5	A+B	QPSK BW=10 RB 1/0	20525	0	Rear	24.18	0.914	28.55	26.86
						0	Front	24.18	0.931	28.47	
						0	Left	24.18	1.350	26.86	
						0	Bottom	24.18	0.824	29.00	
UMPC Extremity-10g	0	LTE B12	A+B	QPSK BW=10 RB 1/49	23095	0	Rear	23.81	0.742	29.09	26.96
						0	Front	23.81	0.724	29.19	
						0	Left	23.81	1.210	26.96	
						0	Bottom	23.81	1.060	27.54	
UMPC Extremity-10g	0	LTE B13	A+B	QPSK BW=10 RB 1/0	23230	0	Rear	24.47	0.483	31.61	30.02
						0	Front	24.47	0.491	31.54	
						0	Left	24.47	0.697	30.02	
						0	Bottom	24.47	0.547	31.07	
UMPC Extremity-10g	0	LTE B26	A+B	QPSK BW=15 RB 1/37	26865	0	Rear	24.01	0.916	28.37	26.69
						0	Front	24.01	0.942	28.25	
						0	Left	24.01	1.350	26.69	
						0	Bottom	24.01	0.856	28.66	
UMPC Extremity-10g	0	LTE B66(4)	B	QPSK BW=20 RB 50/24	132322	0	Rear	19.14	1.320	21.91	20.64
						0	Front	19.14	1.100	22.71	
						0	Left	19.14	0.273	28.76	
						0	Bottom	19.14	1.770	20.64	
UMPC Extremity-10g	0	LTE B41 pc3	B	QPSK BW=20 RB 1/0	41055	0	Rear	17.08	1.050	20.85	17.56
						0	Front	17.08	0.885	21.59	
						0	Left	17.08	0.538	23.75	
						0	Bottom	17.08	2.240	17.56	
UMPC Extremity-10g	0	LTE B41 pc3 upper	F	QPSK BW=20 RB 50/0	41490	0	Rear	19.32	0.660	25.10	23.30
						0	Front	19.32	0.592	25.58	
						0	Top	19.32	1.000	23.30	
UMPC Extremity-10g	0	NR Bn5	A+B	DFT-s- QPSK BW=20 RB 50/28	167300	0	Rear	24.07	1.050	27.84	27.84
						0	Front	24.07	0.773	29.17	
						0	Left	24.07	0.753	29.28	
						0	Bottom	24.07	0.854	28.73	
UMPC Extremity-10g	0	NR Bn66	B	DFT-s- QPSK BW=20 RB 108/54	349000	0	Rear	18.87	0.813	23.75	21.00
						0	Front	18.87	0.670	24.59	
						0	Left	18.87	0.268	28.57	
						0	Bottom	18.87	1.530	21.00	
UMPC Extremity-10g	0	NR Bn41	B	DFT-s- QPSK BW=100 RB 135/138	518598	0	Rear	17.61	0.897	22.06	18.05
						0	Front	17.61	0.693	23.18	
						0	Left	17.61	0.170	29.28	
						0	Bottom	17.61	2.260	18.05	
UMPC Extremity-10g	0	NR Bn41 upper	F	DFT-s- QPSK BW=100 RB 1/1	518598	0	Rear	19.63	0.493	26.68	20.98
						0	Front	19.63	0.702	25.15	
						0	Top	19.63	1.830	20.98	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative P_{limit} instead of calculation P_{limit}.

UMPC Extremity-10g Exposure (DSI = 0) (Continued)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	Plimit (dBm)	Minimum Plimit (dBm)
UMPC Extremity-10g	0	DTS SISO Ant.2	G	802.11b 1Mbps	6	0	Rear	18.64	0.484	25.77	20.29
						0	Front	18.64	0.609	24.77	
						0	Top	18.64	1.710	20.29	
						0	Left	18.64	0.273	28.26	
UMPC Extremity-10g	0	DTS MIMO	H+G	802.11b 1Mbps	11	0	Rear	18.58	0.724	23.96	20.49
						0	Front	18.58	0.850	23.27	
						0	Top	18.58	1.610	20.49	
						0	Left	17.82	1.290	20.69	
UMPC Extremity-10g	0	UNII-2A MIMO	H+J	802.11ac VHT 80	58	0	Rear	15.44	0.855	20.10	20.10
						0	Front	16.72	0.621	22.77	
						0	Top	15.44	0.115	28.81	
						0	Left	16.72	0.505	23.67	
UMPC Extremity-10g	0	UNII-2C MIMO	H+J	802.11ac VHT 80	138	0	Rear	16.11	1.390	18.66	18.66
						0	Front	16.71	0.769	21.83	
						0	Top	16.71	0.105	30.48	
						0	Left	16.71	0.625	22.73	
UMPC Extremity-10g	0	UNII-3 MIMO	H+J	802.11ac VHT 80	155	0	Rear	16.33	0.878	20.87	20.65
						0	Front	16.33	0.924	20.65	
						0	Top	15.68	0.174	27.25	
						0	Left	16.33	0.653	22.16	
UMPC Extremity-10g	0	UNII-4 MIMO	H+J	802.11ac VHT 80	171	0	Rear	15.86	0.996	19.86	19.86
						0	Front	16.37	0.870	20.95	
						0	Top	15.86	0.143	28.29	
						0	Left	16.37	0.509	23.28	
UMPC Extremity-10g	0	WIFI 6e	H+J	802.11ax HE160 72.0 Mbps	79	0	Rear	8.29	0.075	23.52	21.12
						0	Front	9.62	0.177	21.12	
						0	Top	8.29	0.001	43.24	
						0	Left	8.29	0.066	24.07	
UMPC Extremity-10g	0	Bluetooth Ant.1	H	GFSK DH5	39	0	Rear	17.86	0.205	28.72	25.12
						0	Front	17.86	0.435	25.45	
						0	Left	17.86	0.470	25.12	
UMPC Extremity-10g	0	Bluetooth Ant.2	G	GFSK DH5	0	0	Rear	15.07	0.314	24.08	20.53
						0	Front	15.07	0.272	24.70	
						0	Top	15.07	0.711	20.53	
						0	Left	15.07	0.116	28.40	

Notes:

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative Plimit instead of calculation Plimit.

END OF REPORT